

Running Head: DISPATCH PROCEDURES FOR EMERGENCY MEDICAL SERVICES

Dispatch Procedures for Emergency Medical Services Responses
That Require Red Lights and Sirens in the Hanford Fire Department

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Certification Statement

I hereby certify that this paper constitutes my own product, that where the language of others is set forth, quotation marks so indicate, and that appropriate credit is given where I have used the language, ideas, expressions, or writings of another.

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Abstract

This research project was based on the problem that the Hanford Fire Department (HFD) was experiencing difficulty determining dispatch procedures for emergency medical services (EMS) responses that require red lights and sirens. The purpose of this research was to determine procedures for dispatching fire department units to EMS responses that require red lights and sirens. Descriptive research methods were utilized to answer the following research questions: (a) what are the current Central California EMS Authority (CCEMSA) dispatch policies regarding EMS response for first responders in Kings County, CA; (b) what are the current CCEMSA criteria for EMS calls that require red lights and sirens in Kings County, CA; (c) what dispatch procedures do the CCEMSA recommend for EMS response in Kings County, CA; (d) what dispatch procedures are surrounding fire departments in the CCEMSA utilizing to determine EMS response; and (e) what dispatch procedures are surrounding fire departments in the CCEMSA utilizing to determine EMS response to skilled nursing facilities (SNF), urgent cares, and doctor offices? To answer the research questions documents from the local EMS agency were analyzed, an interview was conducted with a representative from the local EMS agency, and a questionnaire was sent to 17 career and combination departments within the jurisdiction of the local EMS authority. The results discovered EMS policies regarding fire department response, dispatch procedures being utilized locally, and the need for written guidelines; which resulted in recommendations that included changing dispatch procedures, creating written dispatch policies and guidelines, and providing the guidelines to EMS dispatch.

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Introduction

Emergency medical services (EMS) systems are designed to provide rapid medical care to victims of life-threatening illnesses or injuries via medical resources and personnel; early activation of the EMS system, professional rescuer care, and advanced prehospital medical care are critical to victim survival (American National Red Cross [ARC], 2006a).

The American fire service depends on rapid response for both fire and EMS services and is able to provide effective and efficient medical care; critical components to the success of emergency care in the field are fire and EMS dispatch centers (International Association of Fire Fighters [IAFF], 2003).

The fire department and EMS communications centers play a key role in the survival of patients in need of emergency medical care by limiting the number of transfers between dispatch centers, utilizing emergency medical dispatch (EMD) triage procedures, and dispatching the appropriate resources (IAFF, 2003; Maguire & Pruden, 2005). Short response times are critical to the mission of the fire service (IAFF, 2003) and “early arrival of emergency personnel increases a person’s chances of surviving a life-threatening emergency” (ARC, 2006b, p.4).

The problem was that the Hanford Fire Department (HFD) recently changed how the department responds to EMS calls and now only responds to EMS calls that require an ambulance with red lights and sirens, but the HFD was experiencing difficulty determining procedures for dispatching fire department units to EMS responses that require red lights and sirens. The purpose of the research was to determine procedures for dispatching fire department units to EMS responses that require red lights and sirens.

Descriptive research was utilized to answer the following research questions: (a) what are the current Central California EMS Authority (CCEMSA) dispatch policies regarding EMS response for first responders in Kings County, CA; (b) what are the current CCEMSA criteria for EMS calls that require red lights and sirens in Kings County, CA; (c) what dispatch procedures do the CCEMSA recommend for EMS response in Kings County, CA; (d) what dispatch procedures are surrounding fire departments in the CCEMSA utilizing to determine EMS response; and (e) what dispatch procedures are surrounding fire departments in the CCEMSA utilizing to determine EMS response to skilled nursing facilities (SNF), urgent cares, and doctor offices?

Background and Significance

The City of Hanford is located in Kings County in Central California approximately 33 miles south of the City of Fresno. The City of Hanford Fire Department (HFD) provides services within the incorporated city limits, covering approximately 13 square miles with a population of approximately 52,687 (City of Hanford, 2011a).

The operations of the HFD are divided into the suppression and prevention divisions. The fire chief oversees all operations within the department and supervises the deputy fire chief and the battalion chief/fire marshal. The deputy fire chief supervises six fire captains, and oversees the training of suppression personnel and suppression division operations. The battalion chief/fire marshal is responsible for code enforcement, fire prevention, public education activities, and manages the prevention division supervising one fire inspector who assists with code enforcement within the City of Hanford. Emergency services are provided by 25 line personnel on three shifts (A, B, and C) who work a 48/96 work schedule (two days on, four days off) consisting of 6 fire captains, 6 fire engineers, and 13 firefighters (City of Hanford, 2011b).

The mission of the HFD is “to protect residents and visitors of Hanford from conditions that would pose a threat to life, environment, and property by utilizing aggressive prevention techniques and when needed respond to all emergencies in a safe, swift, and efficient manner” (City of Hanford, 2011b, Mission Statement section, ¶1). To help achieve this mission, the HFD suppression division provides emergency services through response and by providing training to all personnel.

To protect the citizens of Hanford against medical emergencies, the HFD provides emergency medical services (EMS) at the basic life support (BLS) level of care via engine companies responding from two fire stations within the City of Hanford, and all HFD personnel are certified at the Emergency Medical Technician (EMT) level.

The Central California Emergency Medical Services Agency (CCEMSA) provides medical control and coordinates EMS operations throughout a four county region, which includes Madera, Fresno, Tulare, and Kings Counties (Central California Emergency Medical Services Agency [CCEMSA], 2011). The CCEMSA is a division of the County of Fresno’s Health Services Agency and provides medical control via the following methods: (a) policies and procedures, (b) treatment protocols, (c) certification standards, (d) standards of care, (e) training, and (f) selection of EMS agency staff (Fresno/Kings/Madera Emergency Medical Services, 1997).

HFD units are dispatched to calls for service by the Hanford Police Department (HPD), which is the designated public safety answering point (PSAP) for Hanford and is staffed with HPD personnel. The HFD does not have a dedicated dispatcher in the HPD communications center and the duties for dispatching HFD units are provided by a dispatcher who is also dispatching HPD units.

American Ambulance, who is the contracted ambulance provider for Kings County, provides ambulance service to the City of Hanford and American Ambulance staffs advanced life support (ALS) ambulances with at least one emergency medical technician-paramedic (EMT-P) on each ambulance.

American Ambulance also provides ambulance dispatch services for ambulances in Kings, Madera, and Fresno Counties. In addition to dispatching American Ambulance units, dispatch and call coordination is provided to 10 ambulance companies and two medical helicopter services. American Ambulance expanded dispatch services to include fire dispatch and now provides dispatch services to three fire departments (American Ambulance, 2011).

In the City of Hanford a 9-1-1 call is automatically routed to HPD, which is the designated PSAP, and a HPD dispatcher determines the nature of the call and whether it is a police, fire, or EMS matter. If the call is an EMS request, the HPD dispatcher transfers the call to EMS dispatch and then dispatches the appropriate HFD unit. After the 9-1-1 call is transferred to EMS, American Ambulance utilizes emergency medical dispatch (EMD) to triage EMS calls in order to determine the nature of the call and the response mode of the ambulance. Priority 1 and 2 calls require an ambulance with red lights and sirens, and Priority 3 calls require a non-emergent ambulance responding without red lights and sirens.

Prior to October 1, 2011, HFD responded to all EMS calls requested by 9-1-1. Between 2000 and 2010, the HFD responded to all EMS calls with red lights and sirens regardless of how the ambulance was responding; if the ambulance was responding non-emergent without red lights and sirens the HFD was responding to the same call with red lights and sirens. This caused concern from line personnel because of the dangers of driving with red lights and sirens and not being available for a higher priority call.

When this was brought to the attention of the HFD administration, response to EMS calls was changed, and if the ambulance was responding non-emergent without red lights and sirens HFD units would respond in the same mode. Then on October 1, 2011, the HFD changed EMS response again and now only responds to EMS calls that require an ambulance with red lights and sirens; if the ambulance is responding without red lights and sirens, HFD units will not be dispatched or they will be cancelled en route when the information is received.

Although EMS response has changed, the dispatch procedures have not and this has caused confusion between dispatch and HFD line personnel. Dispatch procedures vary between dispatchers and line personnel are asking dispatch to confirm the response mode of the ambulance on calls that they feel may be non-emergent Priority 3 calls. Some dispatchers will still dispatch HFD units for all EMS calls and then wait to hear from EMS dispatch and some dispatchers will dispatch HFD units if the dispatcher feels that call may be a Priority 1 or 2 call.

This problem affects the ability of the department to achieve its mission of protecting residents and visitors of Hanford by not having effective policies and procedures for dispatching HFD units to EMS responses. This problem not only affects the HFD, but it could also affect surrounding fire departments throughout the CCEMSA, and fire departments throughout the United States that are providing EMS.

If the HFD does not address this problem, then HFD units will continue to be dispatched ineffectively and inefficiently in the future. This could affect response times and crew fatigue and stress by dispatching personnel to calls that they are not needed on.

This problem is directly related to the goal of the Executive Leadership course in the Executive Fire Officer Program (EFOP) at the National Fire Academy (NFA), which is to “develop the ability to conceptualize and employ the key processes used by effective executive-

level managers” (NFA, 2011, p. ix). This problem also relates to one of the operational objectives of the USFA by attempting to “improve the fire and emergency services’ capability for response to and recovery from all hazards” (USFA, 2011, Goals section, ¶4).

Literature Review

The main focus of the literature review revolved around the five research questions regarding EMS response in the fire service and dispatch procedures for EMS calls for service. The literature review was conducted to examine the elements of EMS response and dispatch procedures in the fire service and involved reviewing books, journals, and internet articles.

While most fire departments in the United States and Canada ignored providing other services besides fire protection, a small number of departments expanded their services to provide first aid for victims of illnesses and injuries as early as the 1920s (Page, 2002). Prehospital emergency medical care and transportation continued to evolve along with training personnel and in the 1970s the emergency medical technician (EMT) was created and the term *emergency medical service* (EMS) was used to describe the medical services provided to patients prior to arriving at a hospital (Page, 2002). In the initial stages of providing EMS the care was at the basic life support (BLS) level, but in the 1970s several departments throughout the US were the pioneers providing advanced life support (ALS) with paramedics (Page, 2002). Now that we are in the twenty-first century, most departments are providing BLS care and the trend has been upgrading to provide ALS care (Page, 2002), since 70-80% of emergency calls responded to by fire departments are to provide EMS care (Freeman, 2002).

Response times are critical to provide efficient and effective EMS care by trained personnel who are closest to the scene (Pratt, Pepe, Katz, & Perrse, 2007), and since fire station locations are organized for rapid response in order to get to a scene quickly for fire suppression

(IAFF, 2003), it was determined that fire departments could also get to the scene of an EMS call quickly with a fire engine and provide EMS care to improve the chances of saving lives from cardiac emergencies (Page, 2002). Protecting lives and property is the mission of the fire service and now that EMS response is in coexistence with the fire service; separating it would have a negative effect on the fire service mission (Pratt, et al., 2007).

In order to access the services of the fire service and law enforcement, the Federal Government determined that a universal emergency phone number should be established in 1968, and since the telephone is the most common method of reporting an emergencies, the 9-1-1 phone number was created in the US (Furey, 2003). The creation of 9-1-1 established a free phone number that was easy to remember in order to access the emergency services system (Furey, 2003).

Emergency dispatch is critical to emergency response; response times to EMS calls and fires must be rapid once the call is received, which is why it is important that the dispatch center handle the original 9-1-1 emergency call rapidly (Freeman, 2002; IAFF, 2003). In the US the local law enforcement agency is usually the first agency to answer a 9-1-1 call; the dispatcher determines what type of service is needed and dispatches the appropriate resources or transfers the call to the appropriate agency (Freeman, 2002).

After the 9-1-1 call is answered by the initial dispatch agency, the dispatcher begins gathering information by interrogating the caller to confirm the location of the incident and the nature of the emergency in order to determine the type of incident and resources needed (Furey, 2003; Maguire & Pruden, 2005). The questions asked and directions given by the dispatchers vary between organizations and each agency should establish their own set of guidelines (Furey, 2003).

The creation of the 9-1-1 emergency number was the impetus behind dispatch centers in order to effectively handle 9-1-1 calls for service (Furey, 2003). When a 9-1-1 call is made a *public safety answering point* (PSAP) receives the call and then determines whether the call needs to be transferred to another agency and which resources are needed for the incident (Furey, 2003; Maguire & Pruden, 2005).

Dispatch can be a division of the fire department or it can be provided at the local, county, or regional level, which could result in a law enforcement agency having control; dispatch can also be contracted to a private organization (Furey, 2003). If dispatch is not a division of the fire department there are control issues that need to be addressed and there are concerns that the fire department's needs will be secondary to law enforcement needs in shared dispatch (Furey, 2003).

Coordinating with agencies that interface with the fire department, such as police departments and dispatching agencies, is important because of the possibility of conflict between the activities of each agency involved (Coleman, 2003). Failure to coordinate effectively with other agencies can compromise the fire department's ability to effectively provide services and emergency response to the community (Coleman, 2003).

Dispatch arrangements vary by organization, but the most common method of handling emergency calls involves a police agency handling the initial call and then transferring the call to the appropriate dispatcher or to another agency (Freeman, 2002). It is a common practice for police dispatchers to process and dispatch both police and fire calls or to have a fire dispatcher in the same facility as police dispatchers (Freeman, 2002). In order to reduce costs and improve effectiveness, dispatch centers are consolidated or contracted to private organizations, which is an area where privatization is acceptable in public safety (Campbell, 2002).

The dispatch or communications center is critical to saving lives and an important infrastructure component in the fire service, but the most critical element of a public safety dispatch system is the personnel staffing and operating it (Campbell, 2002; IAFF, 2003; Maguire & Pruden, 2005).

The role of the dispatch center varies between the following options: taking calls and routing to the responsible agency's dispatch center; taking calls and dispatching resources; taking and dispatching calls and providing support to responders; and some centers handle all aspects of the incident from the beginning to the end of the incident (Campbell, 2002). Regardless of the role, the number of times a call is transferred between dispatchers or agencies from the receipt of the call to dispatching resources should be kept to a minimum (IAFF, 2003).

Dispatchers are obligated to quickly determine the location and nature of an emergency call and accurately assign resources, and dispatch centers are utilizing computer aided dispatch (CAD) systems to make this possible (Furey, 2003). CAD systems are an effective means of entering and tracking calls for service; CAD functions vary depending on the software and CAD systems can interface with other computers to share information (Furey, 2003).

Since the 1970s fire departments have been giving pre-arrival instructions to callers while waiting for emergency personnel. These procedures led to the creation of *emergency medical dispatching* (EMD) and specially trained dispatchers, which now includes interrogation to determine actual medical need (Maguire & Pruden, 2005; Page, 2002). Prior to the 1980s EMS dispatching treated all medical requests as life-threatening situations regardless of the actual severity, and all responding fire units and EMS units would respond with red lights and sirens (Page, 2002).

After concerns regarding vehicle collisions, it was determined that little time was actually saved responding to incidents with red lights and sirens and that it was acceptable to allow time to evaluate the severity of the call, which led to structured interrogation allowing dispatchers to obtain information from callers and creating dispatch protocols to determine actual medical need (Page, 2002).

Liability concerns led to resisting the concept of priority medical dispatching, but after the first 20 years there were no incidents of liability reported and it was determined that there were more liability issues in organizations that were not providing pre-arrival instructions (Maguire & Pruden, 2005; Page, 2002). Priority medical dispatching led to creating EMD protocols, which should be established by a recognized medical authority, that allow EMS units to respond without red lights and sirens and also determined whether first responder units were required for certain calls, which can improve system effectiveness (Furey, 2002; IAFF, 2003; Page, 2002).

A dispatch center's ability to support field responders is dependent on having correct policies and procedures in place that clarify expectations of dispatchers and field responders; all dispatch and field personnel must be provided training regarding these policies and procedures (Campbell, 2002). In order to establish an effective dispatch system, the correct protocols must be implemented that address dispatch center operations, prioritization of calls, and what kind of instructions will be given to callers by dispatchers (Maguire & Pruden, 2005).

Regardless of the size of the agency, policies and procedures should be conveyed to all dispatch personnel through training to ensure uniformity of operations and should include telephone procedures, equipment and system operation, Federal Communications Commission (FCC) rules and regulations, alarm response assignments, department organization, local

standard operating procedures (SOP), and disaster or emergency procedures (Furey, 2003).

Standard practices are vital in every aspect of the fire service including the dispatch center, and it is important that all personnel follow the same set of procedures established by the organization for procedural and safety reasons (Furey, 2003).

Recurring themes were found throughout the Literature Review regarding the importance of the dispatch center on response times, and the effect that response times can have on an agency's ability to provide effective emergency medical care and carry out its mission. An important element to effective dispatch, which was discovered in the Literature Review, was establishing effective policies and standard procedures. This discovery has served as the foundation for this research project in order to answer the research questions.

Procedures

Descriptive research methods were utilized to determine procedures for dispatching fire department units to EMS responses that require red lights and sirens in Hanford, CA by analyzing documents from the Central California Emergency Medical Services Agency (CCEMSA), interviewing a representative from the CCEMSA, and distributing a questionnaire to surrounding fire departments.

The first phase of the research process involved document analysis of CCEMSA policies and procedures for guidelines regarding EMS dispatch policies for Kings County first responders and conducting an interview with a CCEMSA representative to answer research question #1: What are the current CCEMSA dispatch policies regarding EMS response for first responders in Kings County, CA; research question #2: What are the current CCEMSA criteria for EMS calls that require red lights and sirens in Kings County, CA; and research question #3: What dispatch procedures do the CCEMSA recommend for EMS response in Kings County, CA?

The document analyzed was CCEMSA (2009) Emergency Medical Services Administrative Policies and Procedures Policy Number 405.20 EMS Dispatch Policy- Kings County, which was found on the CCEMSA website at <http://www.co.fresno.ca.us/DivisionPage.aspx?id=17331> under the Communications section of the CCEMSA policies and procedures.

To answer the first three research questions, a subject matter expert was interviewed utilizing an interview script (see Appendix A) that was created by using information collected through the literature review. The subject matter expert interviewed was EMS Specialist Matt Meyers (personal communication, November 28, 2011), who was selected because of his position for the EMS Communications Center Division of the CCEMSA, which oversees ambulance dispatch policies and procedures for the CCEMSA including Kings County; see Appendix B for Matt Meyers' Curriculum Vitae. The interview took place on November 28, 2011; Mr. Meyers was contacted at the CCEMSA via telephone (559-445-3205).

The first limitation to this method was that only policies and procedures from the CCEMSA were analyzed regarding EMS response in Kings County and not any other counties within the CCEMSA. The second limitation was that only one representative from the CCEMSA was interviewed. The third limitation to this method was that only policies from the CCEMSA were discussed and policies from other EMS agencies were not involved. The last limitation to this method was that only dispatch procedures for response to EMS calls were discussed.

The interview with EMS Specialist Matt Meyers (personal communication, November 28, 2011) consisted of nine questions. Question 1 was: Does EMS Dispatch have policies regarding fire department response to EMS calls from local fire departments in the CCEMSA? Question 2 was: Are there CCEMSA policies or procedures regarding how PSAP agencies

should dispatch fire department units to EMS calls? Question 3 was: What are the current criteria for EMS calls that require red lights and sirens (Priority 1 and 2 calls)? Question 4 was: Are you aware of any PSAP agencies that use emergency medical dispatch to determine fire department response to EMS calls prior to transferring the call to EMS dispatch? Question 5 was: What procedures do you recommend the HFD dispatch follow in regards to determining fire department response to EMS calls? Question 5 included three additional questions: (a) Conference with EMS until the call is triaged and ambulance priority is determined; (b) Use a pre-determined list; and (c) Interrogate and triage the call before transferring the call to EMS? Question 6 was: What dispatch procedures are fire departments in the CCEMSA following? Question 7 was: What dispatch procedures do you recommend to follow regarding fire department EMS response to skilled nursing facilities, urgent cares, or doctor's offices? Question 7 included three additional questions: (a) Conference with EMS until the call is triaged and ambulance priority is determined; (b) Use a pre-determined list; and (c) Interrogate and triage the call before transferring the call to EMS? Question 8 was: Are there any technologies or other methods to assist the HFD with dispatching fire department units to EMS calls? Question 9 was: How long does it take for EMS dispatch to triage a 9-1-1 call in order to determine the priority of the call?

The second phase of the research project involved collecting data from surrounding fire departments to answer research question #4: What dispatch procedures are surrounding fire departments in the CCEMSA utilizing to determine EMS response; and research question #5: what dispatch procedures are surrounding fire departments in the CCEMSA utilizing to skilled nursing facilities (SNF), urgent cares, and doctor offices?

In order to collect this information, the Hanford Fire Department Dispatch Questionnaire (see Appendix C) was created. The purpose of the questionnaire was to collect information in order to determine what procedures surrounding fire departments were using to dispatch fire department units to EMS calls. The questionnaire was developed by utilizing information collected through the literature review and it was tested by two EFOP graduates for ambiguity, clarity, and unnecessary questions.

The top section of the questionnaire asked for the following department information: (a) department name, (b) county, and (c) career or combination. Question 1 was: Which agency provides dispatch services for your fire department units (first responders)? Question 2 was: Which EMS calls does your department respond to as first responders? Question 3 was: How is fire department (first responder) response to EMS calls determined? Question 4 was: How is fire department (first responder) response determined when your department receives a request from a skilled nursing facility, urgent care, or doctor's office? Question 5 was: Does your department provide the ambulance-dispatching agency for your jurisdiction a policy with your guidelines for EMS response? All questions were multiple-choice, and space was provided to add comments for each question.

The total population that was selected to receive the questionnaire included all career and combination fire departments within the CCEMSA, which is the four-county region including Fresno, Tulare, Kings, and Madera counties. This region was selected because Hanford is located in Kings County and the CCEMSA governs EMS operations for all departments within the four counties.

The California Professional Firefighters (CPF) (2011) Online Fire Department Directory located at <http://www.cpf.org/go/cpf/serving-our-profession/fire-department-directory/> was

utilized to determine the career and combination fire departments in Fresno, Tulare, Kings, and Madera counties. The researcher accessed the website and under the *Search* section of the web page the following information was entered: Kings was entered in the *County* search box and then the *Search* button was selected. The results of the search were displayed and the career and combination departments were recorded. This procedure was repeated by entering the following counties: (a) Madera, (b) Fresno, and (c) Tulare. The fire department search resulted in 17 career and combination departments (see Appendix D) that constituted the total population to receive the questionnaire.

On December 8, 2011, a cover letter (see Appendix E), the Hanford Fire Department Dispatch Questionnaire, and a self-addressed stamped envelope were sent to all 17 fire departments by standard mail via the United States Postal Service with a closing date of January 10, 2012. On January 10, 2012, 14 of the 17 respondents returned the questionnaire and the results were collected and analyzed.

The number of questionnaires returned was not enough to achieve significant results at the 95% confidence level without utilizing a confidence interval. In order to generalize the results for the total population of fire departments within the CCEMSA, a confidence interval had to be determined. A sample size calculator was utilized by accessing the Creative Research Systems (2010) website at <http://www.surveysystem.com/sscalc.htm> in order to determine the appropriate confidence interval. Under the *Find Confidence Interval* section the following information was entered: (a) the 95% confidence level was selected, (b) 14 was entered in the *Sample Size* box, (c) 17 was entered in the *Population* box, and (d) the default setting of 50 was left in the *Percentage* box. The *Calculate* button was selected and the confidence interval was

calculated at 11.34, so a confidence interval of 11 would be utilized meaning that the results of the questionnaire would be 95% certain within ± 11 .

The limitations to this method were that only career and combination departments were sent the questionnaire excluding volunteer departments, it was limited to departments within the CCEMSA region located in the CPF (2011) Online Fire Department Directory, and the scope of the questionnaire was limited to dispatch procedures for EMS calls.

Results

Results for research question #1: What are the current CCEMSA dispatch policies regarding EMS response for first responders in Kings County, CA, were obtained from document analysis of CCEMSA (2009) Policy Number 405.20: EMS Dispatch Policy-Kings County and from interview questions 1 and 2 (See Appendix A) with CCEMSA EMS Specialist Matt Meyers (personal communication, November 28, 2011).

The analysis of CCEMSA policies and procedures resulted in the discovery of Policy Number 405.20: EMS Dispatch Policy-Kings County (CCEMSA, 2009), which explained EMS dispatch's notification procedures for notifying the appropriate fire department to respond on certain types of EMS calls within Kings County. The policy regarding ambulance/medical aid requests states "if the request results in a Code 3 (emergency red lights and siren) ambulance response, notify the appropriate first responder/fire agency" (CCEMSA, 2009, Procedure Section II.B, p. 1). The policy also states "if within the City of Hanford, notify Hanford Police Department" (CCEMSA, 2009, Procedure Section II.B.1, p. 1).

Interview question 1 asked: Does EMS dispatch have policies regarding fire department response to EMS calls from local fire departments in the CCEMSA? The CCEMSA only recommends fire departments respond to Priority 1 calls, but fire departments have policies for

EMS to follow regarding which calls the fire department will respond to and when they want to be cancelled (personal communication (Matt Meyers, personal communication, November 28, 2011). Mr. Meyers (personal communication, November 28, 2011) also stated that a department could have a policy regarding how the department will handle a call, whether it is conferencing with dispatch or using a pre-determined list.

Interview question 2 asked: Are there CCEMSA policies or procedures regarding how PSAP agencies should dispatch fire department units to EMS calls? No, there are only policies on how calls are routed from the public safety answering point, which can be found in the policy section of the EMS website (Matt Meyers, personal communication, November 28, 2011).

Results for research question #2: What are the current CCEMSA criteria for EMS calls that require red lights and sirens in Kings County, CA, were obtained from interview question 3 (See Appendix A) with CCEMSA EMS Specialist Matt Meyers (personal communication, November 28, 2011) and from a CCEMSA document sent by Mr. Meyers to the author via email on November 28, 2011, with a list of incident types and the default responses for EMS.

Interview question 3 asked: What are the current criteria for EMS calls that require red lights and sirens (Priority 1 and 2 calls)? Mr. Meyers (personal communication, November 28, 2011) stated that depending on the type of incident there are default priorities that will give you Priority 1, 2, or 3. There is a list of default priorities for all Priority 1, 2, and 3 calls when the call is initially received, but then the priority could be upgraded or downgraded by EMS dispatchers through emergency medical dispatch (EMD).

Mr. Meyers sent a document from the CCEMSA computer aided dispatch database to the author via email on November 28, 2011, which contained a list of the types of incidents that EMS responds to and the default priority for each incident. The document was analyzed and a

list of Priority 1 and 2 default EMS responses was created to demonstrate which incidents ambulance units respond to with red lights and sirens (see Appendix F). A list of Priority 3 default EMS responses was also created to demonstrate which incidents ambulance units respond to without red lights and sirens (see Appendix G).

Results for research question #3: What dispatch procedures do the CCEMSA recommend for EMS response in Kings County, CA, were obtained from interview questions 4-9 (See Appendix A) with CCEMSA EMS Specialist Matt Meyers (personal communication, November 28, 2011).

Interview question 4 asked: Are you aware of any PSAP agencies that use emergency medical dispatch to determine fire department response to EMS calls prior to transferring the call to EMS dispatch? Not within the CCEMSA, but it may occur in other jurisdictions where the fire departments also do ambulance transport and they dispatch their own fire and EMS units (Matt Meyers, personal communication, November 28, 2011).

Interview question 5 asked: What procedures do you recommend the HFD dispatch follow in regards to determining fire department response to EMS calls? Mr. Meyers (personal communication, November 28, 2011) stated that the best procedure would be to have American Ambulance EMS dispatch provide fire dispatch for the HFD, but there would be costs and contracts for the HFD.

There were three additional parts to interview question 5. The first part was: (a) Conference with EMS until the call is triaged and ambulance priority is determined? Mr. Meyers (personal communication, November 28, 2011) stated that this would be a good option, but EMS dispatchers take around 30 seconds to triage the call before they dispatch EMS units, so HFD dispatchers would have to conference for about 30 seconds to determine if fire is needed.

The second part of interview question 5 was: (b) Use a pre-determined list? Mr. Meyers (personal communication, November 28, 2011) stated that this would be the easiest option and the HFD could create a list of the Priority 1 and 2 calls that they will respond to. The HFD can provide that list to EMS dispatch and if the HFD does not want to go on Priority 3 calls, then the HFD can advise EMS dispatch to have them call back to cancel fire.

The third part of interview question 5 was: (c) Interrogate and triage the call using EMD before transferring the call to EMS? No, the CCEMSA does not recommend that PSAPs use EMD prior to transferring the call to EMS. This will cause an additional delay before it is transferred to EMS, which can extend the time that it takes to get an ambulance en route. Plus, there could be issues with the medical authority allowing this (Matt Meyers, personal communication, November 28, 2011). Mr. Meyers (personal communication, November 28, 2011) also added that the quickest procedure would be to dispatch everything initially to get fire responding and then have EMS dispatch recontact HFD dispatch after EMD is completed and the final priority is determined, then HFD can cancel or continue fire response.

Interview question 6 asked: What dispatch procedures are fire departments in the CCEMSA following? Mr. Meyers (personal communication, November 28, 2011) stated that it varies and each department responds to EMS calls differently. For example Fresno Fire only responds to Priority 1 calls and Clovis Fire responds to Priority 1 and 2 calls.

Interview question 7 was a three-part question that asked: What dispatch procedures do you recommend to follow regarding fire department EMS response to skilled nursing facilities, urgent cares, or doctor's offices? The first part was: (a) Conference with EMS until the call is triaged and ambulance priority is determined? This is a good option if the dispatchers are willing

to wait on the line until the call is prioritized (Matt Meyers, personal communication, November 28, 2011).

The second part of interview question 7 was: (b) Use a pre-determined list? This is also a good option because it will save the dispatcher time and get fire units en route faster (Matt Meyers, personal communication, November 28, 2011).

The third part of interview question 7 was: (c) Interrogate and triage the call using EMD before transferring the call to EMS? No, as was stated before, the CCEMSA does not recommend that PSAPs use EMD prior to transferring the call to EMS dispatch (Matt Meyers, personal communication, November 28, 2011). Mr. Meyers (personal communication, November 28, 2011) also added that fire should only respond if the initial report is for a pulseless non-breathing patient. Per CCEMSA policy, these facilities can determine the priority of the call without EMD from dispatchers since they have medical personnel on scene and policies require that fire departments are only notified to respond to pulseless non-breathing patients. These facilities have a phone number to EMS dispatch, which bypasses the 9-1-1 system and the PSAPs, and if the call is severe enough then EMS dispatch will notify the corresponding fire department to respond if it meets that department's response criteria.

Interview question 8 asked: Are there any technologies or other methods to assist the HFD with dispatching fire department units to EMS calls? Mr. Meyers (personal communication, November 28, 2011) stated that there are technologies but they are expensive. One of the technologies used within the CCEMSA is a CAD-to-CAD program that CalFire is using. This program allows CalFire's CAD and EMS's CAD to communicate with each other without having to call each other. Once the EMS CAD has the call prioritized it communicates

with CalFire's CAD and the call appears on the CalFire dispatcher's screen. This interface costs approximately \$25,000 and it would depend on what type of CAD the HFD is currently using.

Interview question 9 asked: How long does it take for EMS dispatch to triage a 9-1-1 call in order to determine the priority of the call? The goal is one minute to have the call dispatched once the call is received by EMS dispatch. The first 30 seconds is allowed for triaging the call and determining the priority and the second 30 seconds are allowed to determine the best unit to respond to the call and dispatch the unit. Most of the time it takes a dispatcher around 30 seconds to have the call prioritized (Matt Meyers, personal communication, November 28, 2011).

The results for research question #4: What dispatch procedures are surrounding fire departments in the CCEMSA utilizing to determine EMS response, were collected from questions 1, 2, 3, and 5 of the Hanford Fire Department Dispatch Questionnaire (see Appendix C), which collected information from combination and career fire departments within the four-county region of the CCEMSA. The total population was 17 and 14 questionnaires were returned. Results of the questionnaire were 95% certain within ± 11 . Department information was collected and 8 of 14 (57%) were career departments and 6 of 14 (43%) were combination departments.

Question 1 asked which agency provides dispatch services for fire department units; and 5 of 14 (36% ± 11) have a dedicated fire department dispatch; 4 of 14 (29% ± 11) share dispatch services with police; and 5 of 14 (36% ± 11) utilize a private or other public agency. Four of the five agencies utilize American Ambulance EMS Dispatch to dispatch their fire department units.

Question 2 asked which EMS calls does the fire department respond to; and 5 of 14 (36% ± 11) respond to all calls that require an ambulance with red lights and sirens (Priority 1 and 2

calls); 3 of 14 (21% \pm 11) respond to calls that require a Priority 1 ambulance only; 1 of 14 (7% \pm 11) respond to all calls with red lights and sirens regardless of the priority of the ambulance (Priority 1, 2, and 3); 4 of 14 (29% \pm 11) respond to all calls (Priority 1, 2, and 3) with the same response as the ambulance; and 1 of 14 (7% \pm 11) utilizes all three depending on the location of call and whether it is a rural, metro, or wilderness area.

Question 3 asked how fire department (first responder) response to EMS calls was determined; and 7 of 14 (50% \pm 11) departments' dispatchers conference with EMS dispatch until EMS determines the priority of the call; 5 of 14 (36% \pm 11) departments utilize a pre-determined list with the types of calls the fire department will be dispatched to; 0 of 14 (0% \pm 11) departments' dispatchers interrogate callers to determine the priority of the call and then transfer the call to EMS dispatch; and 2 of 14 (14% \pm 11) utilize other methods, which consisted of one department utilizing a CAD-to-CAD system and the other department using one dispatch center to dispatch both fire and EMS units.

Question 5 asked if the department provides the ambulance dispatch agency in their jurisdiction with a policy with the department's guidelines for EMS response and 7 of 14 (50% \pm 11) do and 7 of 14 (50% \pm 11) do not provide policies to their ambulance dispatch agency.

The results for research question #5: What dispatch procedures are surrounding fire departments in the CCEMSA utilizing to skilled nursing facilities (SNF), urgent cares, and doctor offices, were collected from question 4 of the Hanford Fire Department Dispatch Questionnaire (see Appendix C), which collected information from combination and career fire departments within the four-county region of the CCEMSA. The total population was 17 and 14 questionnaires were returned. Results of the questionnaire were 95% certain within \pm 11.

Question 4 asked how fire department (first responder) response is determined when receiving a request from a skilled nursing facility, urgent care, or doctor's office; and 3 of 14 (21% \pm 11) departments respond at the request of EMS; 4 of 14 (29% \pm 11) departments utilize a pre-determined list of incidents; 4 of 14 (29% \pm 11) departments' dispatchers conference with EMS dispatch until response is determined by EMS; 2 of 14 (14% \pm 11) departments respond at the request of the facility; and 1 of 14 (7% \pm 11) departments utilizes another type of response and only responds to a request for a pulseless nonbreathing patient.

Discussion

The results of this Applied Research Project correlated well with the information contained within the Literature Review section and offered information to assist the HFD with determining dispatch procedures for EMS responses that require red lights and sirens. The results have shown that there are several options available to the HFD to effectively dispatch fire resources to EMS calls.

The focus of this research project was dispatch procedures for EMS responses that require red lights and sirens, and since response times are critical in order to provide effective EMS care (Pratt, et al., 2007) it is imperative that the HFD has effective dispatch procedures in order to maintain rapid response times.

A critical component to response times is the dispatch center, which must be able to handle the 9-1-1 call quickly and determine the appropriate resources that are needed (Freeman, 2002; IAFF, 2003). The results of this project have shown there are methods available to assist the HFD with more effective dispatch procedures.

The CCEMSA does not have policies dictating how a PSAP should dispatch fire department units to EMS calls within Kings County, but fire departments can have their own

policies for EMS to follow regarding how the fire department will respond to EMS calls and when they want to be cancelled (Matt Meyers, personal communication, November 28, 2011), which is supported by Furey (2003), who recommends that each agency should establish their own dispatch guidelines.

Although the CCEMSA does not have policies dictating how PSAPs should dispatch fire units to EMS calls, CCEMSA (2009) Policy 405.20 does state that if an ambulance request results in a response with red lights and sirens (Priority 1 and 2) within the City of Hanford, the appropriate fire agency should be notified. So the HFD administration's decision to only respond to EMS calls when EMS units are responding with red lights and sirens was within the CCEMSA policies. The results of the questionnaire also proved that this was the most popular response option and approximately 36% of fire departments within the CCEMSA only respond to Priority 1 and 2 EMS calls, approximately 21% respond to Priority 1 calls only, and approximately 29% responded to Priority 3 calls (ambulance without red lights and sirens).

Since the CCEMSA policy advises fire departments to respond to Priority 1 and 2 calls within Hanford, and most fire departments within the CCEMSA are only responding to Priority 1 and 2 EMS calls, the HFD should continue to respond to Priority 1 and 2 EMS calls. Using emergency medical dispatch allows response without red lights and sirens and determines the need for first responder units, which improves system effectiveness (Furey, 2002; IAFF, 2003; Page, 2002).

Since the HFD administration determined that fire units will only respond when the ambulance was responding with red lights and sirens, it was important to determine which types of calls were determined to be Priority 1 and 2 calls, which require an ambulance with red lights and sirens. This important information was collected through the interview with CCEMSA EMS

Specialist Matt Meyers (personal communication, November 28, 2011) and a list of Priority 1 and 2 calls was created (see Appendix F) to show the types of calls that EMS responds to with red lights and sirens; a list of priority 3 calls was also created (see Appendix G) to show the types of calls that EMS responds to without red lights and sirens.

These lists could be utilized as an option to determine which calls the HFD will be dispatched to, which is a procedure used by approximately 36% of CCEMSA departments. The CCEMSA also recommended that the use of a pre-determined list would be the easiest option, and a list of Priority 1 and 2 calls could be created and given to EMS dispatch along with the orders to cancel fire response if EMS was responding without red lights and sirens (Matt Meyers, personal communication, November 28, 2011).

Although the CCEMSA stated that using a list would be the easiest option, approximately 50% of CCEMSA fire departments' dispatch conference with EMS dispatch until the priority is determined and then fire units are dispatched. One of the issues with utilizing this procedure is that HFD dispatchers would have to stay on the line with EMS dispatchers for approximately 30 seconds before dispatching fire units, which causes a delay; one of the most important roles of the dispatcher is to quickly determine the nature and accurately dispatch resources (Furey, 2003).

Since the CCEMSA recommends utilizing a list and approximately one-third of fire department within the CCEMSA utilize lists, the HFD should utilize lists to determine which EMS calls HFD dispatch will send fire units on; this will also avoid delays associated with conferencing and it will result in quick dispatch times, and early activation of the EMS system is critical to victim survival (American Red Cross, 2006a).

One of the dispatch options discussed by the HFD administration was for HPD dispatchers to utilize emergency medical dispatch (EMD) interrogation to determine the nature

of the call prior to transferring it to EMS dispatch. Currently, no fire departments are utilizing this method within the CCEMSA and the CCEMSA does not recommend it because it causes an additional delay and extends the time that it takes to get an ambulance en route (Matt Meyers, personal communication, November 28, 2011), which is critical to emergency response, response times, and providing effective EMS care (Freeman, 2003; IAFF, 2003; and Pratt, et al., 2007). This was also verified by the results of the questionnaire with 0% of CCEMSA fire departments utilizing this procedure. Since this procedure is not recommended by the CCEMSA and no departments within the CCEMSA are utilizing it, this is not a viable option for the HFD.

Another option mentioned by the CCEMSA was the use of CAD-to-CAD technology, which can be an effective mean for entering and tracking calls for service (Furey, 2003). This technology allows the CADs from a fire agency and EMS dispatch to communicate with each other without having to notify each other over a phone line, but it would depend on the CAD system used and it would cost approximately \$25,000 (Matt Meyers, personal communication, November 28, 2011). This was confirmed through the results of the questionnaire with one department using a CAD-to-CAD program with EMS. The HFD would not be able to incur this cost, plus there could be additional costs if the current CAD is not compatible, so this is not a viable option for the HFD.

Mr. Meyers (personal communication, November 28, 2011) also added that the quickest procedure would be to dispatch everything initially to get fire responding and then have EMS dispatch cancel fire if it meets the HFD's criteria to cancel. This is critical because the number of times a call is transferred should be kept to a minimum (IAFF, 2003) and response times are critical to providing care (Pratt, et al., 2007).

Out of all of the options discovered through this research project the best options for dispatching HFD units to EMS calls were: (a) utilizing a list of Priority 1 and 2 calls (see Appendix F) that HPD dispatchers could utilize to determine response based on the initial request of the 9-1-1 caller, which would be the easiest option; or (b) dispatching HFD units to all requests initially and then having EMS cancel fire if the EMS response is Priority 3 (without red lights and sirens), which would be the quickest option. Neither of these options would require additional funding nor delay the time that it would take to get fire department units responding.

The results of the questionnaire were inconclusive in regards to fire department response to skilled nursing facilities, clinics, or doctor's offices with approximately 29% of departments using a list, 29% of departments conferencing with EMS dispatch, and 21% of departments responding at the request of EMS. CCEMSA EMS Specialist Matt Meyers (personal communication, November 28, 2011) recommended dispatching to these facilities by either utilizing a pre-determined list, which would save the dispatchers time and get fire units en route faster, or only responding to a report of a pulseless non-breathing patient. Per CCEMSA policy, these facilities can determine the priority of the call without triaging from EMS dispatchers, and CCEMSA policies only require that fire departments respond to pulseless non-breathing patients at these facilities (Matt Meyers, personal communication, November 28, 2011). Results of this research project show that the HFD only has to respond to these facilities for pulseless non-breathing patients.

Regardless of the options selected, the HFD should establish policies and procedures regarding EMS response, because a dispatch center depends on them to support field operations (Campbell, 2002), they ensure uniformity of operations (Furey, 2003), and standard practices are vital in the fire service (Furey, 2003). Approximately 50% of the departments within the

CCEMSA provide EMS dispatch with fire department policies and procedures regarding EMS dispatch and response. The lack of policies and procedures could result in a lack of coordination between fire and EMS agencies, which could affect the department's ability to provide effective EMS response to the community (Coleman, 2003).

An unexpected finding in this research project was the use of private organizations to provide fire department dispatch. Results of the questionnaire discovered that four fire departments within the CCEMSA are utilizing American Ambulance EMS Dispatch to provide fire department dispatch services, which proves that privatization is effective and an acceptable option in public safety (Campbell, 2002).

The results of this research project have proved that there are methods available to improve the dispatch procedures in the HFD for EMS response, which would could improve response times and in turn improve service (Pratt, et al., 2007). The dispatch center is an important element of the fire department and critical to saving lives (Campbell, 2002; IAFF, 2003; Maguire & Pruden, 2005), but needs to have guidelines to provide effective services. The HFD can improve the level of EMS care by selecting a procedure discovered in this research project and creating guidelines for response in order to carry out the mission of the HFD.

Recommendations

This research has concluded that there are changes that need to be made in order to improve dispatch procedures to EMS calls in Hanford, CA. Recommendations that specifically relate to dispatch procedures to EMS calls include:

1. Continue only responding to Priority 1 and 2 EMS calls within the City of Hanford. Results of this research project proved that CCEMSA policies and procedures only require the HFD to respond to Priority 1 and 2 calls, and the CCEMSA does not recommend responding to

Priority 3 calls. Implementing this recommendation will ensure that HFD units are only sent to the most emergent calls. It will keep HFD units available to provide EMS care to the highest priority EMS calls and reduce the chance of being committed to a non-emergent call.

2. Create dispatch procedures to include utilizing a list of Priority 1 and 2 calls that HPD dispatchers will use to determine HFD response. Results of the interview with CCEMSA EMS Specialist Matt Meyers (personal communication, November 28, 2011) showed that this would be the easiest option and it would not delay dispatch or response times like conferencing would. Implementing this recommendation will improve dispatch procedures by dispatching units to calls that only require a Priority 1 or 2 ambulance. It will be more effective because HPD will have a list to determine response and resources will not be ineffectively dispatched to Priority 3 calls, only to be cancelled by EMS after dispatchers triage the call.

3. Create written procedures and guidelines for responding to Priority 1 and 2 calls by utilizing Appendix F, which was discovered through this research project. Results of this research project have provided a list of Priority 1 and 2 calls that is utilized by EMS, which can be used to determine HFD response. Written procedures and guidelines should include the list showing what types of calls HFD units will be dispatched to and when HFD units will be cancelled. Implementing this recommendation will clarify the expectations between the dispatch center and field units. It will give the dispatcher standard guidelines that all dispatchers will use, improving efficiency and efficacy of operations.

4. Create procedures for EMS response to skilled nursing facilities, clinics, and doctor's offices that require response for pulseless non-breathing patients only. Results of this research project have proved that CCEMSA policies only require that fire departments be requested for response at these facilities for pulseless non-breathing patients and it is also recommended by

CCEMSA EMS Specialist Matt Meyers (personal communication, November 28, 2011).

Implementing this recommendation will ensure that the HFD is complying with CCEMSA policies and that HFD units are only sent to the most emergent calls. It will keep HFD units available to provide EMS care to the highest priority EMS calls and reduce the chance of being committed to a non-emergent call.

5. Provide EMS with the policies and guidelines created through this research project. EMS dispatch should be made aware that the HFD only responds to Priority 1 and 2 calls and should be cancelled for Priority 3 calls. EMS dispatch should also be provided with the list of call types utilized to determine HFD response to EMS calls. Implementing this recommendation will improve coordination between the HFD and EMS dispatch resulting in improved service provided in the field by HFD units.

6. Reevaluate the dispatch procedures and guidelines implemented through this research project after six months. Consult with HPD dispatch on the effectiveness of the dispatch procedures and guidelines and make adjustments as necessary. Consult with HPD about the possibility of having dispatchers conference with EMS dispatchers and the feasibility of implementing the procedure. Evaluate dispatch times over this period of time to ensure that they meet department standards.

7. Additional research for the HFD. The HFD should explore the option of privatization of dispatch services with American Ambulance EMS Dispatch. CCEMSA EMS Specialist Matt Meyers (personal communication, November 28, 2011) recommended it and stated that it would be the best option for the HFD. Four fire departments in neighboring Fresno County utilize EMS dispatch to provide fire dispatch service. Information can be collected from these agencies along with a cost analysis for services to determine if it would be a viable option for the HFD.

8. Additional research for future readers. Additional research in this area could include determining the reason why departments respond to certain EMS calls. Some departments in this survey respond to all calls regardless of EMS response and some only respond to Priority 1 calls. It would be beneficial to other departments to determine if there are financial, moral, or liability reasons.

References

- American Ambulance (2011). *EMS dispatch*. Retrieved on December 8, 2011, from http://www.Americanambulance.com/Company/Co_Services.aspx
- American Red Cross (2006a). *CPR/AED for the professional rescuer: Instructor's manual*. Yardley, PA: Staywell.
- American Red Cross (2006b). *First aid/CPR/AED for schools and the community*. Yardley, PA: Staywell.
- California Professional Firefighters (2011). *CPF online fire department directory*. Retrieved on December 7, 2011, from <http://www.cpf.org/go/cpf/serving-our-profession/fire-department-directory/>
- Campbell, T.R.S. (2002). Communication systems and emergency response centers. In D. Compton & J. Granito (Eds.), *Managing fire rescue services* (pp. 447-483). Washington, D.C.: International City/County Management Association.
- Central California Emergency Medical Services Agency (CCEMSA) (2009, April). *Policy Number 405.20: EMS dispatch policy*. Fresno, CA: Author.
- Central California Emergency Medical Services Agency (CCEMSA) (2011, May). *Policy number 011: EMS policy implementation*. Fresno, CA: Author.
- City of Hanford (2011a). *Demographics*. Retrieved December 7, 2011, from <http://www.ci.hanford.ca.us/about/demographics.asp>
- City of Hanford (2011b). *Hanford fire department*. Retrieved December 7, 2011, from <http://www.ci.hanford.ca.us/depts/fire/default.asp>
- Coleman, R.J. (2003). Fire department management. In R.C. Barr & J.M. Eversole (Eds.), *The fire chief's handbook* (6th ed., pp. 1-11). Tulsa, OK: Fire Engineering.

Creative Research Systems (2010). *Sample size calculator*. Retrieved January 10, 2012, from

<http://www.surveysystem.com/sscalc.htm>

Fresno/Kings/Madera Emergency Medical Services (1997, February). *Policy number 020:*

Medical control for the Fresno/Kings/Madera EMS system. Fresno, CA: Author.

Freeman, P.M. (2002). Organizing and deploying resources. In D. Compton & J. Granito (Eds.),

Managing fire rescue services (pp. 105-137). Washington, D.C.: International

City/County Management Association.

Furey, B. (2003). Fire department communications. In R.C. Barr & J.M. Eversole (Eds.), *The fire*

chief's handbook (6th ed., pp. 453-499). Tulsa, OK: Fire Engineering.

International Association of Fire Fighters (2003). *Emergency medical services: A guidebook for*

fire-based systems (4th ed.). Wasington, DC: Author.

Maguire, V.A. & Pruden, J.N. (2005). Emergency Medical Dispatch. In J. Brennan & J. Kromher

(Eds.), *Principles of EMS systems* (3rd ed.) (pp. 120-131). Sudbury, MA: Jones &

Bartlett Learning.

National Fire Academy. (2011, April). *Executive fire officer program: Applied research*

guidelines. Emmitsburg, MD: Author.

National Fire Academy (2011, September). *Executive leadership: EL student manual* (6th ed.).

Emmitsburg, MD: Author.

Page, J.O. (2002). Modern fire protection, emergency medical, and rescue services. In D.

Compton & J. Granito (Eds.), *Managing fire rescue services* (pp. 3-37). Washington,

D.C.: International City/County Management Association.

Pratt, F.D., Pepe, P.E., Katz, S., & Persse, D. (2007). *Prehospital 9-1-1 emergency medical response: The role of the united states fire service in delivery and coordination.*

Retrieved December 9, 2011, from http://www.iaff.org/Tech/PDF/FBEMSTools/TK_Preh911EmerMedResp.pdf

United States Fire Administration (2011). *Strategic plan.* Retrieved December 7, 2011, from <http://www.usfa.fema.gov/about/strategic/>

Appendix A

Interview Questions for EMS Specialist Matt Meyers

1. Does EMS dispatch have policies regarding fire department response to EMS calls from local fire departments in the CCEMSA?
2. Are there CCEMSA policies or procedures regarding how PSAP agencies should dispatch fire department units to EMS calls?
3. What are the current criteria for EMS calls that require red lights and sirens (Priority 1 and 2 calls)?
4. Are you aware of any PSAP agencies that use emergency medical dispatch to determine fire department response to EMS calls prior to transferring the call to EMS dispatch?
5. What procedures do you recommend the HFD dispatch follow in regards to determining fire department response to EMS calls?
 - a. Conference with EMS until the call is triaged and ambulance priority is determined?
 - b. Use a pre-determined list?
 - c. Interrogate and triage the call using EMD before transferring the call to EMS?
6. What dispatch procedures are fire departments in the CCEMSA following?
7. What dispatch procedures do you recommend to follow regarding fire department EMS response to skilled nursing facilities, urgent cares, or doctor's offices?
 - a. Conference with EMS until the call is triaged and ambulance priority is determined?
 - b. Use a pre-determined list?
 - c. Interrogate and triage the call using EMD before transferring the call to EMS?
8. Are there any technologies or other methods to assist the HFD with dispatching fire department units to EMS calls?
9. How long does it take for EMS dispatch to triage a 9-1-1 call in order to determine the priority of the call?"

Appendix B

Curriculum Vitae- Matt Meyers

Experience:

EMS Specialist- Central California Emergency Medical Services Agency- 12 years

Communications Supervisor- American Ambulance

Professional Qualifications:

Emergency Medical Technician- Paramedic

Emergency Medical Dispatcher

Emergency Medical Technician- I

Appendix C

Hanford Fire Department Questionnaire

Department Name _____ County _____

Career _____ Combination _____

1. Which provides dispatch services for your fire department units (first responders)?

_____ Dedicated FD dispatch

_____ Shared services with law enforcement dispatch

_____ Other private or public agency

If other, name of agency _____

2. Which EMS calls does your department respond to as first responders?

_____ All calls that require an ambulance with red lights and sirens (Priority 1 and Priority 2 calls)

_____ Calls that require a Priority 1 ambulance only

_____ All calls with red lights and sirens regardless of priority of ambulance (Priority 1, 2, and 3 calls)

_____ All calls (Priority 1, 2, and 3) with the same response as the ambulance

_____ Other/Comments _____

3. How is fire department (first responder) response to EMS calls determined?

_____ Fire department dispatchers conference with EMS dispatch until EMS determines priority of the call

_____ Pre-determined list is utilized with the types of calls the FD will be dispatched to

_____ Fire dispatchers interrogate callers to determine the priority of the call and then transfer the call to EMS dispatch

_____ Other/Comments _____

4. How is fire department (first responder) response determined when your department receives a request from a skilled nursing facility, urgent care, or doctor's office?

_____ At the request of EMS

_____ Pre-determined list

_____ Fire department dispatchers conference with EMS dispatch until response is determined by EMS

_____ At the request of the skilled nursing facility, urgent care, or doctor's office

_____ Other/Comments_____

5. Does your department provide the ambulance dispatching agency in your jurisdiction a policy with your guidelines for EMS response?

_____ Yes

_____ No

Comments_____

Appendix D

Fire Departments in the CCEMSA

<u>Department</u>	<u>Address</u>	<u>City</u>	<u>County</u>
Madera County Fire Department	14225 Rd. 28	Madera, CA 93638	Madera
Madera Fire Department	5366 Hwy. 49 North	Mariposa, CA 95338	Madera
Clovis Fire Department	1233 - 5th Street	Clovis, CA 93612	Fresno
Coalinga Fire Department	300 W. Elm Ave.	Coalinga, CA 93210	Fresno
Fresno Fire Department	911 H Street	Fresno, CA 93721	Fresno
Fresno County Fire Protection District	210 S. Academy Ave.	Sanger, CA 93657	Fresno
Kingsburg Fire Department	1460 Marion Street, P.O. Box 2	Kingsburg, CA 93631	Fresno
Sanger Fire Department	1700 7 th St.	Sanger, CA 93657	Fresno
Selma Fire Department	2861 A Street	Selma, CA 93662	Fresno
Kings County Fire Department	280 N. Campus Drive	Hanford, CA 93230	Kings
NAS, Lemoore Federal Fire Department	767 Franklin Ave.	Lemoore, CA 93246	Kings
Dinuba Fire Department	420 E. Tulare Street	Dinuba, CA 93618	Tulare
Lindsay Department of Public Safety	185 N. Gale Hill Ave.	Lindsay, CA 93247	Tulare
Porterville Fire Department	40 W. Cleveland	Porterville, CA 93257	Tulare
Tulare Fire Department	800 S. Blackstone Street	Tulare, CA 93274	Tulare
Tulare County Fire Department	907 West Visalia Road	Farmersville, CA 93223	Tulare
Visalia Fire Department	707 W. Acequia Ave.	Visalia, CA 93291	Tulare

Appendix E

Fire Department Questionnaire Cover Letter

December 8, 2011

To Whom It May Concern:

My name is Christopher Ekk and I am a captain with the Hanford Fire Department. I am completing my last year of the Executive Fire Officer Program (EFOP) at the National Fire Academy and I recently completed the course titled *Executive Leadership*. A requirement for each class is to complete an applied research project (ARP) relating to an issue in my department. My research project is identifying dispatch procedures to emergency medical services (EMS) responses that require red lights and sirens.

Two of my research questions regard determining dispatch procedures that surrounding agencies are utilizing to determine fire department (first responder) response to EMS calls. I have enclosed a questionnaire consisting of five questions and I would greatly appreciate the time it would take for you, or a member of your department, to complete the questionnaire and return it using the enclosed self-addressed stamped envelope by January 10, 2012. This survey is being sent to all career and combination departments governed by the Central California Emergency Medical Services Agency (CCEMSA) within Madera, Fresno, Kings, and Tulare Counties.

Thank you for your help and participation with this project.

Christopher Ekk, M.S.
2407 Fernwood Drive
Hanford, CA 93230
ekk.chris@gmail.com

Appendix F

Default EMS Response for Priority 1 and 2 Calls by Incident Type

Priority 1 (red lights and sirens)

Aircraft down
 Breathing problems
 Burns/explosion
 Carbon monoxide/inhale/HazMat
 Cardiac or respiratory arrest
 Chest pain
 Choking
 Convulsions/seizures
 Diabetic problems
 Drowning/diving/Scuba accident
 Falls/on ground/>10'
 Industrial/machinery accident
 Rescue/high angle/water
 Sick person with difficulty breathing
 Stabbing/gun shot wound/penetrating
 Traffic accident/pin in/rollover
 Traumatic injury
 Unconscious/fainting (near)

Priority 2 (red lights and sirens)\

Abdominal pain
 Allergies/envenomation
 Animal bites/attacks
 Assault/sexual assault
 Convulsions/seizures
 Diabetic problems
 Electrocution/lightning
 Eye problems/injuries
 Falls
 Heart problems
 Heat/cold exposure
 Hemorrhage/lacerations
 Overdose/poisoning (ingestion)
 Pregnancy/childbirth/miscarry
 Stroke (CVA)
 Traumatic injury (specific)
 Unknown problem (person down)

Appendix G

Default EMS Response for Priority 3 Calls by Incident Type

Priority 3 (no red lights and sirens)

Back pain (non-traumatic)

Headache

Psychiatric/suicide attempt

Sick person